

Amendment and Response

Applicant: Xiang Dai et al.

Serial No.: 10/612,663

Filed: July 2, 2003

Docket No.: 200308566-1/H300.211.101

Title: SUPPORTING A CIRCUIT PACKAGE INCLUDING A SUBSTRATE HAVING A SOLDER COLUMN ARRAY

REMARKS

The following remarks are made in response to the Office Action mailed August 12, 2004. Claims 1-7 were withdrawn from consideration and have accordingly been cancelled without prejudice. Claims 17-20 were allowed. Claims 8, 9, and 11-16 were rejected. Claim 10 was objected to. With this Response, claims 8-9, 13, and 15-17 have been amended. New claims 21-28 have been added. Claims 8-28 are pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 102

In the Office Action, claims 8, 9, 11-13, 15, and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by the Palaniappa et al. U.S. Patent No. 6,394,820.

The Palaniappa Patent discloses a packaged device adapter assembly 10, which is shown in an assembled state in Figures 1A, 2A, and 3-8. Figures 1B and 2B are merely exploded views of those same assemblies and illustrate assembly 10 prior to assembly, or in an unassembled state. In an assembled state, cover member 60 as shown in Figures 1A, 2A, and 3-8 is always in contact with fasteners 159, 161. Moreover, fasteners 159, 161 extend through a hole in cover member 60. Furthermore, packaged device 80 is separate from cover member 60.

In contrast, amended independent claim 8 includes the limitations that an integrated circuit package includes a substrate having a solder column array connecting the integrated circuit package to the printed circuit board and a lid that extends outwardly over an edge of the substrate. Accordingly, in amended claim 8, the lid forms part of the integrated circuit package. However, in the Palaniappa Patent, cover member 60 is separate from packaged device 80 (e.g., ball grid array package, flat package, etc as described at Column 6, lines 48-65) and does not form part of packaged device 80.

In further contrast to the Palaniappa Patent, amended independent claim 8 includes the limitations that one support of a plurality of supports is disposed at each corner of the integrated circuit package underneath the lid of the integrated circuit package. However, in the Palaniappa Patent, fastener 59, 159 (e.g. a screw) extends through cover member 60, and is not disposed underneath cover member 60.

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In further contrast to the Palaniappa Patent, amended independent claim 8 includes the limitations that each support is sized and shaped to enable a gap between the lid of the integrated circuit package and the supports in a first assembled state of the system, and to enable contact between the lid of the integrated circuit package and the supports without the gap in a second assembled state of the system.

In the Palaniappa Patent, however, only one assembled state exists for packaged device 80 (as shown in Figure 1A) in which fastener 59 is in direct contact with cover member 60 at all times, leaving no gap between fastener 59 and cover member 60. As shown in Figure 2A, only one assembled state exists for packaged device 180 in which fastener 159 is in direct contact with cover member 160 at all times, leaving no gap between fastener 159 and cover member 160. Fastener 161 never contacts cover member 160 in this assembled state. Figures 3, 4 and 6, 7 exhibit similar constructions regarding cover member 60, 160 and fasteners 59, 159, 161.

Accordingly, the Palaniappa Patent fails to disclose two different assembled states, a first assembled state and a second assembled state, in which the supports enable a gap to exist between the lid of the integrated circuit package and the supports in the first assembled state, and enable no gap to exist between the lid of the integrated circuit package and the supports in a second assembled state, as claimed in amended independent claim 8.

For these reasons, the Palaniappa Patent fails to teach or suggest amended independent claim 8, and therefore Applicant's amended independent claim 8 is patentable and allowable over the Palaniappa Patent. In addition, dependent claims 9-14 are also believed to be allowable as they further define patentably distinct independent claim 8.

In contrast to the Palaniappa Patent, amended independent claim 15 includes means for electrically and mechanically connecting means for performing circuit functions to means for carrying circuit components, and also second means for mechanically connecting the means for performing circuit functions to the means for carrying circuit components. The second means enables a gap between the means for performing circuit functions and the means for carrying circuit components in a first assembled state of the system, and enables translation of a compressive force from the means for performing circuit functions to the means for carrying

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circuit components without the gap in a second assembled state of the system, as claimed by Applicants.

In the Palaniappa Patent, however, only one assembled state exists as shown in Figures 1A, 2A, 3-4, and 6-7. As shown in Figure 1A, in the only assembled state of packaged device 80, fastener 59 is in direct contact with cover member 60 at all times, leaving no gap between fastener 59 and cover member 60. Similarly, as shown in Figure 2A, in the only assembled state of packaged device 180, fastener 159 is in direct contact with cover member 160 at all times, leaving no gap between fastener 159 and cover member 160. Fastener 161 never contacts cover member 160 in this assembled state. Figures 3-4 and 6-7 exhibit similar constructions regarding apparently analogous cover members and fasteners in those Figures.

Accordingly, the Palaniappa Patent fails to disclose two different assembled states, a first assembled state and a second assembled state, in which the second means for mechanically connecting the means for performing circuit functions to the means for carrying circuit components enables, in cooperation with the means for electrically and mechanically connecting, a gap to exist between the means for performing circuit functions and the means for carrying circuit components in the first assembled state, and enables the gap to no longer exist in a second assembled state of the system to translate a compressive force from the means for performing circuit functions to the means for carrying circuit components, as claimed in amended independent claim 15.

For these reasons, the Palaniappa Patent fails to teach or suggest Applicant's amended independent claim 15, and therefore Applicant's amended independent claim 15 is patentable and allowable over the Palaniappa Patent. In addition, dependent claim 16 is also believed to be allowable as they further define patentably distinct independent claim 15.

In view of the above, Applicant respectfully requests that the above 35 U.S.C. § 102 rejections to claims 8, 9, 11-13, 15, and 16 be reconsidered and withdrawn and that these claims be allowed.

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Claim Rejections under 35 U.S.C. § 103

In the Office Action, claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the Palaniappa Patent.

For the reasons presented above, amended independent 8 is believed to be allowable over the Palaniappa Patent. Therefore, dependent claim 14 is believed to be allowable, because it further defines patentably distinct independent claim 8.

Allowable Subject Matter

Claims 17-20 are allowable.

The Examiner objected to claim 10 for being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims and if rewritten to overcome the 35 U.S.C. § 112 rejections.

Accordingly, allowable limitations of dependent claim 10 and base claim 8 are incorporated into new independent claim 28. Therefore, new independent claim 28 is believed to be in allowable form, and Applicant respectfully requests allowance of new claim 28.

Other New Claims

New claims 21-25 further define patentably distinct independent claim 8. New claims 26-27 further define patentably distinct independent claim 15. Therefore dependent claims 21-27 are believed to be allowable, and Applicant respectfully requests allowance of these new dependent claims.

CONCLUSION

In view of the above, Applicant respectfully submits that all pending claims 8-28 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and objections and allowance of claims 8-28, including already allowed claims 17-20, is respectfully requested.

Applicants hereby authorize the Commissioner for Patents to charge Deposit Account No. 08-2025 the amount of \$18.00 to cover fees as set forth under 37 C.F.R. 1.16(b)(c).

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The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Paul S. Grunzweig at Telephone No. (612) 767-2504, Facsimile No. (612) 573-2005 or David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 12th day of November, 2004.

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